DEVELOPMENT OF STABLE PRALINES FOR THE TROPICS USING MANGO FATS

Phuong Diem Tran*[12], Davy Van de Walle[1], Michael Hinneh[1], Dung Nhan Tran[2], Koen Dewettinck[1]

[1] Ghent University, Belgium; [2] Can Tho University, Viet Nam

Introduction

In this study, the impact of the incorporation of mango fats from different origins (Vietnam VMF *versus* India IMF) and whether (IMFst and IMFole) or not fractionated (VMF and IMF) on the thermal resistance of and oil migration within chocolate products was investigated. Following chemical characterization (HPLC-ELSD) of the mango fats, specific blend ratios with cocoa butter (CB) were selected, applied in chocolate shells and evaluated for their stickiness (oil release at elevated temperature) and melting profile (instrumental *versus* sensorial). Next, the (oil migration) fat bloom retarding capacity of the mango fats in chocolate coatings using an accelerated fat bloom test (chocolate coating in contact with hazelnut filling rich in liquid oil and storage at elevated temperature (23°C)). Again, both instrumental (HPLC-ELSD and cryo-SEM) and sensorial analyses (trained panel for visual assessment) were performed.

Compatibility of mango fat s with cocoa butter

Figure 1: Comparison of TAG-profile of MF to CB using HPLC-ELSD

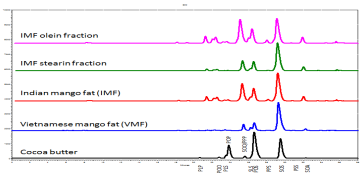


Figure 2: Compatibility of MF/CB

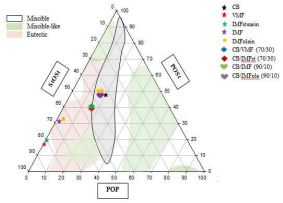
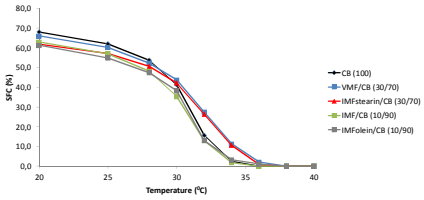


Figure 3: Solid fat content profile of selected blends



Impact of mango fats on heat resistance in chocolates

Figure 4: Oil release from chocolates at 34°C

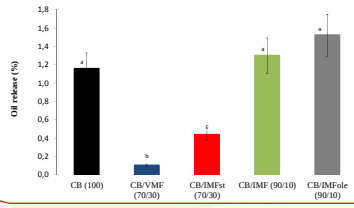


Figure 5: Melting profile of chocolates using DSC

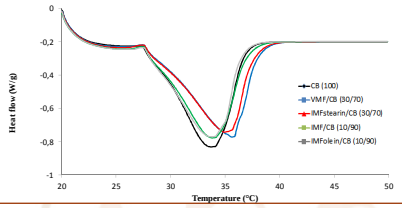
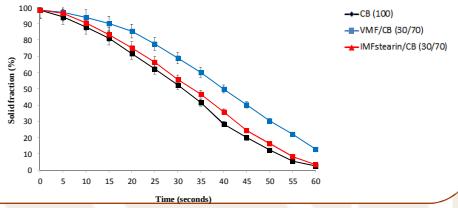


Figure 6: Melting behaviour of chocolates using trained panelists



Impact of mango fats on oil migration and fat bloom in filled chocolates

Figure 7: Cryo-SEM images of fat bloom development on chocolate surface at 23°C for 8.5 weeks

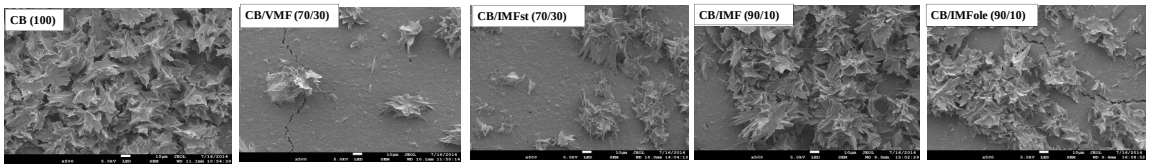


Figure 8: Visual fat bloom score for chocolate at 23°C by panelists

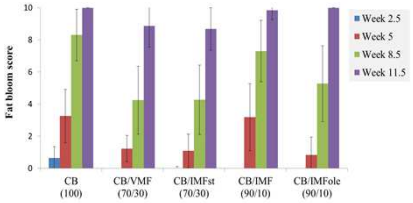
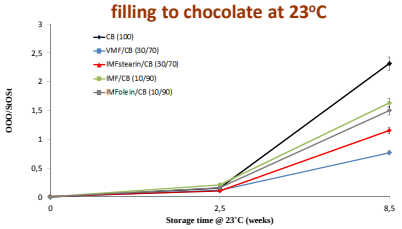


Figure 9: Oil migration from hazelnut filling to chocolate at 23°C



Similar trends were observed in both cryo-SEM imaging and visual fat bloom assessment by trained panelists. The observed fat bloom was due to differences in oil migration. Chocolates containing VMF exhibited the least oil migration, followed by those with IMFst, IMFole, IMF and lastly the CB sample.

Conclusions

- The incorporation of VMF and IMFst can be tuned for the development of non-waxy, more heat resistant chocolates/compounds (depending on local legislation).
- The incorporation of mango fats into chocolate coatings retards oil migration from hazelnut filling which positively affects the fat bloom stability.

Acknowledgements

BTC (Belgian Technical Cooperation is acknowledged for granting the PhD scholarship. Hercules foundation is recognized for its financial support in the acquisition of the scanning electron microscope JEOL JSM-7100F equipped with cryo-transfer system Quorum PP3000T (grant number AUGE-09-029).

Department of Food Safety and Food Quality -Laboratory of Food Technology and Engineering (FTE)
Contact person: Phuong Diem Tran
Coupure Links 653, B-9000 Gent, Belgium. Tel: +32-(0)9 264 61 98 / +32 (0) 486740329

http://www.fte.ugent.be/
DiemPhuong.Tran@UGent.be